Utah could produce power for 1.4 billion people, say clean energy experts

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Posted: 7:47 PM- Utah has the potential to be a major exporter of clean energy.

Make that mega major.

Energy experts who have calculated the state's renewable energy potential figure there are enough geothermal and wind resources to supply 9.9 million people at today's national consumption levels. If Utah's potential with a newer solar technology also is considered, there could be enough power for an additional 1.4 billion people.

With the nation increasingly experiencing energy difficulties and in the face of global warming science, focusing on renewable energy that minimizes carbon dioxide emissions is crucial, according to a geothermal Power boost?

Speaking Friday during a governor's energy forum at the Capitol, the experts talked up renewables and what development could mean for the state's residents and economy. They also noted that the industry can't move forward without more federal and state incentives such as tax credits and regulatory reform and planning and zoning changes at the local level.

Larry Flowers, a wind-power specialist with the U.S. Department of Energy's National Renewable Energy Laboratory in Colorado, said that with Utah and adjacent Western states in the climate-change bull's-eye, wind energy has become more attractive when compared with building new coal-fired or natural-gas power plants.

Already, wind supplies 13,000 megawatts of power in the United States and 80,000 megawatts around the world. The goal for 2030 is around 325 gigawatts of generated power, triple the total national consumption today.

With natural gas supplies and prices fluctuating, liquefied natural gas has been identified as a future energy source. But that would only continue the nation's dependence on foreign suppliers, Flowers said.

Steadily escalating prices for copper, concrete and steel has made new wind power development cheaper than new coal. But it is still more expensive than old coal plants, Flowers said.

More problems: There aren't enough transmission lines in the right places, the existing power grid is deteriorating, where to put the lines is hugely contentious and up-front costs are prohibitive without more state and federal incentives. Traditional fossil fuels and nuclear energy already receive billions of dollars in subsidies.

Thomas Mancini, a solar power expert for the Sandia National Laboratories in New Mexico, said utility-scale concentrating solar technology is 10 years behind wind technology. But already contracts have been signed to develop 3 gigawatts of concentrating solar capacity in the Southwest and up to 5 gigawatts elsewhere. Combined, those projects could supply 24 million people.

Sandia calculated that Utah's large-scale solar potential is 456,147 megawatts, enough for nearly 1.4 billion people at today's national consumption levels. One megawatt is enough for about 750 homes, or 3,000 people.

A 350 megawatt plant has been operating in California's Mojave Desert for a decade, Mancini said. That power costs about 12 cents to 16 cents per kilowatt hours, about three times what Utah residents pay for PacifiCorp electricity. PacifiCorp's mix is about 65 percent coal-fired, the dirtiest type of power contributing to global warming.

Besides its initial cost, solar power has been limited by its daytime-only generation. But a new technology that uses molten salt can store energy-producing heat for seven and a half hours, Mancini said.

Geothermal, however, could stand in for traditional base-load energy because it is available around the clock, said Paul Thomsen, spokesman for Ormat Technologies. The Reno, Nevada, company develops, builds, owns and operates geothermal and recovered energy generation power plants in the United States, Guatemala, Kenya and Nicaragua.

Utah's current geothermal output is minimal, yielding only about 37 megawatts.

By comparison, Nevada's state renewable energy standard has helped spur development of about 200 megawatts of geothermal energy.

In the absence of any federal program, 25 states have adopted renewable energy standards that are giving renewables a boost. Gov. Jon Huntsman Jr. is pushing for a renewable energy standard that could mean 20 percent of the state's total would come from alternative sources.

Those sources likely will be more expensive than traditional energy in the near term. But Utah Clean Energy executive director Sarah Wright, who is helping Huntsman achieve his conservation goal of 20 percent, pointed out that households saving that much would completely offset any renewable energy-related cost increases.

Ormat's 100 megawatt plant in Nevada represented a $350 million investment and netted the state $2 million in taxes in 2006, Thomsen said.

Mancini said that if 1,000 megawatts of concentrating solar energy were developed in Utah, that would mean $2 billion to $4 billion in private investment. The investment would create 3,000 to 4,000 construction jobs, 250 permanent solar plant jobs mostly in rural areas and bring $1 billion in state taxes.

Utah's geothermal, wind and solar energy potential could be enough to supply more than a billion people in the foreseeable future. Here's the breakdown:

-- Geothermal: 850 megawatts, 2.5 million people.

-- Wind: 2,449 megawatts, 7.3 million people.

-- Concentrating solar: 456,147 megawatts, 1.4 billion people.

Source: Ormat Technologies, Reno; National Renewable Energy Laboratory, Colorado; Sandia National Laboratories, New Mexico.
Energy industry representative and two federal scientists.